Quality Assurance (QA) Plan

1.0 Introduction

Project Name: Enterprise Portal

Channel: CIO

Project Sponsor: Jennifer Douglas / Steve Hawald / John Reeves

Project Lead: Constance Davis / Jacqueline Dufort

1.1 Purpose

The purpose of the Quality Assurance Plan is to establish a sound QA approach that maintains the integrity of the SFA Enterprise Portal systems and provides applicable procedures and standards to adhere to for the entire solution life cycle. Quality Assurance activities begin in the vision phase with planning and process consulting. QA Lead resources are identified by the Project Manager to draft the project's QA plan. The SFA QA/ IV & V Team helps the project ensure they are building the appropriate system correctly.

1.2 Project Overview

Please refer to the Solution Acquisition Plan. The document defines and describes the project to which the QA Plan applies. The document includes scope of the project, timetable, milestones, key deliverables, etc.

1.3 Relationship to Other Plans

The QA plan is developed in parallel with the acquisition planning effort and the project planning effort. Updates to the QA plan will be controlled in accordance with the project's configuration management process. A schedule for QA activities is incorporated into the Work Breakdown Structure/Project Plan. The Solution Acquisition Plan refers to the QA plan and the Work Breakdown Structure/Project plan for the QA schedule and assigned QA responsibilities.

1.4 QA Process

1.4.1 Quality Verification Process Matrix

Quality verification consists of 3 major activities:

- Process Reviews
- Management Deliverable Reviews
- Peer/ Technical Deliverable Reviews

These activities occur throughout the development lifecycle as shown in the matrix below. Below is the description of each of the columns in the table:

Process	Activities involved in the verification process
Timing	Frequency or schedule followed in performing a specific

verification process.

Doc. Requirements Documentation produced from the verification process.

Resp. Individual or team responsible for performing the process.

Objectives End-goal or purpose of performing the process, i.e. After performing process, which quality program has been verified?

Process	Timing/Sample Rate	Resp.	Objectives
Process Reviews			
SQA Reviews	According to SQA schedule	Jacqueline Dufort	Project is following processes and standards set forth by the Solution Life Cycle.
Management Deliverable Reviews			
Document Review	After completion of each Project Management Deliverable (100%)	Jacqueline Dufort	Product is consistent with standards set forth by the Solution Life Cycle.
Peer/ Technical Deliverable Reviews			
Requirements Review	After completion of requirements document (100%)	Eluid Genera	Product is consistent with business case.
Detailed Design Review	After completion of each design package (100%)	Matt Wilson	Product is consistent with baselined requirements.
Code Inspection	After obtaining a clean compile (100%)	Matt Wilson	Product is consistent with baselined requirements, and design.
Unit Test Review	After unit testing (100%)	Erick Middleton	Unit testing is complete and accurate; Code is working according to specs.
System Integration Test Review	After system integration testing (100%)	Erick Middleton	Objects comprising a logical unit of work are complete, consistent, & interact with each other
Usability Test Review	After usability testing (100%)	Erick Middleton	System meets client requirements for usability.
Performance Test Review	After performance testing (100%)	Matt Wilson	System meets the specified performance requirements.
User Acceptance Test	After user acceptance testing (100%)	Erick Middleton	System meets client requirements.

1.4.2 Preventive and Corrective Action Procedures

The conduct of various status meetings and user review sessions are aimed at preventing the occurrence of major problems during the life of the project. The various

inspection and review processes, on the other hand, are aimed at detecting errors in the product as they occur and addressing these to ensure that they do not get passed on to the next phase of the development life cycle. Another procedure that aims to prevent problems and correct errors is the issue tracking system.

- During the weekly status meetings, functional and technical issues and problems will be discussed to promptly address and resolve them before they impact schedule and budget. In addition, critical issues or problems requiring urgent attention will be raised by the team leads and/or the project manager, and meetings and/or conference calls will be scheduled as necessary.
- Causes of errors found during the inspection and review processes will be determined and documented using the error/defect tracking worksheet. Individual observations (e.g. during the inspection and testing processes) will be discussed during the team and/or project meetings to ensure that the causes of problems or errors are eliminated by the project as a whole.
- Any error detected during product tests that necessitate changes will be documented as a Systems Investigation Request (SIR) which should be approved by the team leader and/or engagement manager depending on the impact of the change.
- If a flaw lies in the existing project standards and procedures, the related documentation will be modified to reflect the corrections and the team will be notified for immediate implementation.
- The Project Manager would address issues arising with subcontractor deliverable non-compliance. The Project Manager could call for discussion and explanation of the caused for the non-compliance and if resolution is not achieved could escalate the issue by means of a letter written to the Subcontractor management.

1.4.3 Issue Tracking

ISSUE DEFINITION: Issues describe situations that have occurred, or are occurring. Issues can imply something is wrong, or that a key decision needs to be made.

The Enterprise Portal Project has implemented an issue tracking procedure involving the use of the Enterprise Portal Issues Log.

Pertinent steps are shown below:

- Identify and document issue using the Enterprise Portal Issue Log in eProject.
- Review issue and analyze impact on deliverables, scope, contingency, resources, costs, schedule, and/or quality. Identify resolution approval party, issue owner, and determine expected time frames
- Research and identify issue solution alternatives
- Escalate issue to program/ senior management when the project cannot resolve the issue internally and when they impede the progress of a project and are beyond the authority of the project manager to resolve. These are generally issues that 1) Cannot be resolved within a project team, 2) Are resolvable with action items, 3) Can be escalated to the next level, 4) Are reactively discovered during the course of development, 5) Affect program/project scope, costs, schedule, projected business performance, or high level design, 6) Affect multiple projects or releases, 7) Involve groups outside the project that affect project delivery
- Monitor issues status and approve or reject resolutions
- Communicate resolutions to stakeholders and affected parties

- Take corrective action

1.4.4 Risk Management

RISK DESCRIPTION: Risks describe situations that could occur. If the situation does occur, it would have a significant impact on the project. This section serves as guidance and the plan that should be followed to manage risk.

The Enterprise Portal project follows the following risk management procedures:

Step	Action to be taken	Stage of the Risk Management Process
1	Identify a risk if one exists, if risk exists it should be raised to project management.	Risk Identification
2	Assign a name to the risk	Risk Identification
3	Include risk in the Enterprise Portal Risk Tracking Mechanism. All Enterprise Portal Risks should be entered into the Enterprise Portal Project's weekly status report.	Risk Identification
4	Document known triggers for each risk item as well as the source of the risk	Risk Identification
5	Analyze the risks identified by brainstorming or in management team meetings.	Risk Analysis
6	Risks are also to be classified as either high, medium, low.	Risk Analysis
7	Identify how the risk can be avoided or mitigated	Risk avoidance activities attack the source of a risk reducing the probability that it will become a problem.
8	If risks cannot be avoided or mitigated sufficiently, they must be raised to project management.	Risk Avoidance and Mitigation
9	If the project Manager is unable to avoid of sufficiently mitigate the risk, working with the client's project manager, it should be raised with the project engagement partner.	Risk Avoidance and Mitigation
10	The Partner may choose to address the risk to Client higher management in order to resolve.	Risk Avoidance and Mitigation

1.4.5 Other Quality Verification and Assurance Processes

Software Quality Assurance reviews (SQAs)
Software Quality Assurance (SQA) is a process which ensures the Enterprise Portal project's work products, project management processes, high-level development processes, and day-to-day practices conform with the project's documented processes and standards.
The primary targets of the software quality assurance process are project management and development. Software quality assurance, when applied consistently at all levels of the project, can have a profound impact on the consistent use of standard practices and the take-up of new processes.

This SQA process is designed to verify compliance to the Enterprise Portal project's processes and standards, communicate non-compliance items to senior management, recommend corrective action and facilitate follow-up of all identified non-compliance items. SQA also allows for process improvement and learning.

Software quality assurance activities are planned. The Enterprise Portal Project Plan and the Enterprise Portal Work Plan should reflect software quality assurance activities for Enterprise Portal project, and should allow for adequate resources, specify dates, and assign responsibilities. SQA reviews will be conducted when all key deliverables are completed. Individuals who will be performing the reviews should also be identified up front. This process is iterative, which must be continually executed, evaluated, and enhanced, in order to effectively add value to Accenture engagements.

Adherence of work products and activities to the applicable standards, procedures, and requirements is verified objectively. The key words here are "activities" and "objectively". It is the responsibility of the SQA reviewer to help verify that the project-defined standards are enabling the overall success of the Enterprise Portal project.
The SQA reviewer informs affected groups and individuals of software quality assurance activities and results. Results of SQA reviews are shared with everyone who is affected by the results: the author, project manager, program management office, the project partner, and the Process Improvement (PI) Liaison. The results include the documented findings of the SQA reviewer, as well as the documented actions that will be taken to address non-conformance items that are found.

Non-compliance items that cannot be resolved by the Enterprise Portal project team are addressed by senior management. When issues arise with executing the project according to plan, or with a change in the assumptions upon which the plan was built, they must be addressed. The Enterprise Portal project leaders and the SQA reviewer must agree on a resolution to any non-compliance item discovered in the SQA review. Items that cannot be resolved at the project leader level are escalated to the Integrated Project Team and/or senior management for resolution. By having a formal escalation policy and defining time boxes for responses, sensitive issues are more likely to be dealt with before a crisis occurs.

Peer Reviews

Peers are the primary reviewers in the project. All key deliverables need to go through a peer review for control purposes. Key deliverables are those that constitute an end product of the project or are important for the further development process. All key deliverables will go through at least one peer review. The peer reviewer should review deliverables prior to the meeting.

Peer reviews are not intended to cover for lack of experience of the first person. A peer is somebody occupied with the same or similar tasks as the reviewed person. He/she, by definition, does not need to have more experience or any other distinguishing from the reviewed person.

The approval of results is documented by the signature of the reviewer. Recommendations and corrections from the reviewers must be dealt with. They can be documented in free write-ups or checklists. A classification of A, B, C is used to indicate:

A: Severe issue – approach not agreed and will affect system result
B: Issues that requires rework, but approach agreed
C: Documented minor issues that is dealt with by the person reviewed.

Desirable side effects of peer reviews are expected to be:

- All team members get used to and value a constant review process
- The ability to evaluate work of others is enhanced
- Reviewers learn about the work of others and thus broaden their view of the overall project.

Once a peer review has taken place, the peer reviewer should place all comments and feedback for that deliverable in eProject under the Specific Deliverable\Comments and Feedback.

Team Lead Reviews

In general Team Leaders are responsible for the content and completeness of the deliverables from the team. Any work result is eligible for review by a team leader. This is part of the verification process for deliverables. Generally team leaders can evaluate work from a broader viewpoint, hence supporting consistency in work style, level of detail, integrity of designs, communication of changes and other items. Team leaders should be careful to review all deliverables of that type. For example, this would include functional/technical design, detailed design, project code, and test documentation, to ensure that overall quality is acceptable.

Once all peer reviews on a specific deliverable have been completed, the team lead will review the deliverable along with that deliverable's comments and feedback. The team lead will review the deliverable and make sure that the appropriate comments and feedback from the peer reviews were incorporated. The team leader will then complete a team lead review and place it in eProject under the Specific Deliverable\Comments and Feedback.

Responsibility	Activity
Process Improvement (PI) Liaison and/or Project Manager	Create QA plan (including schedule roles and responsibilities).
Project Manager and /or QA Manger	Provide QA reviewer with project background information including the final QA Plan. Submits reminder notification based on scheduled QA reviews.
QA Team Member	Prepare, conduct and follow up on deliverables scheduled for QA reviews.
Project Team Member	Create and update the deliverables for QA reviews.
SFA QA Liaison	Schedules and conducts discussion of nonconformance items with the Document/Process Owner. Escalates nonconformance to PI Liaison, as necessary.

2.0 QA Plan

2.1 QA Schedule and Responsibilities

Deliverable / Processes for QA Review	QA Reviewer Name (Use Notes ID)	Process / Deliverable Owner Name (Use Notes ID)	Review Standard / Supporting Documents	Client Due Date	Scheduled QA Review Start Date	Scheduled QA Review End Date
SFA Enterprise Portal Work Breakdown Structure/Project Plan	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Jacqueline A. Dufort@Accenture.com		02/01/02	02/01/02	Ongoing
Configuration Management Plan (CM)	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Brent W. Urcheck@Accenture.com		02/01/02	02/01/02	
Quality Assurance Plan (QA)	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Erick C. Middleto@Accenture.com		02/01/02	02/01/02	
Solution Acquisition Plan	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Brent W. Urcheck@Accenture.com		02/01/02	02/01/02	
Requirements	pnorton@b	Eliud		02/01/02	02/01/02	

Traceability Matrix	scsys.com Francis_Tang@ed.gov tcross@bscsys.com	Gerena@Accenture.com				
High Level Requirements	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Jacqueline A. Dufort@Accenture.com		02/01/02	02/01/02	
Detailed Requirements Document	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Eliud Gerena@Accenture.com		02/01/02	02/01/02	
Security Vision Phase Checklist	SSO	Erick C. Middleto@Accenture.com		02/01/02	02/01/02	
Preliminary Design Document	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com		02/01/02	02/01/02	
Detailed Design Document	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com		02/11/02	02/11/02	
Requirements Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Eliud Gerena@Accenture.com			02/04/02	
Update Requirements Traceability Matrix	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Eliud Gerena@Accenture.com		02/11/02	02/11/02	
Detailed Design Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com			02/14/02	
Security Definition	System	Erick C.			02/14/02	

Phase Checklist	Security Officer	Middleto@Accenture.com				
System Integration Deliverable Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Erick C. Middleto@Accenture.com			03/19/02	
Usability Deliverable Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Erick C. Middleto@Accenture.com			03/26/02	
User Acceptance Test Deliverable Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Erick C. Middleto@Accenture.com			04/01/02	
Performance Deliverable Review and Sign-off	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com			04/03/02	
Security Construction Phase Checklist	System Security Officer	Erick C. Middleto@Accenture.com				
Configuration Item Index	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com			03/28/02	
Pre-Production Readiness Review	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Jacqueline A. Dufort@Accenture.com				
Transition to Support Readiness Review	pnorton@bscsys.com Francis_Tang@ed.gov tcross@bscsys.com	Matthew B. Wilson@Accenture.com			04/04/02	
Security Deployment Phase Checklist	System Security Officer	Erick C. Middleto@Accenture.com			04/11/02	
PRR Review and	pnorton@b	Jacqueline A.			04/12/02	

Sign-off	scsys.com Francis_Tang@ed.gov tcross@bscsys.com	Dufort@Accenture.com				

2.2 Process Reviews

Phase	*Process Reviews to be conducted*	*Applicable Standard*
Vision	Review and Approve Project Work Plan	Solution Life Cycle
Definition	Requirements Review and Sign-off Detailed Design Review and Sign-off	Solution Life Cycle
Construction	Code Inspection Unit Test Review System Integration Deliverable Review and Sign-off Usability Deliverable Review and Sign-off User Acceptance Test Deliverable Review and Sign-off Performance Deliverable Review and Sign-off Pre-Production Readiness Review PRR Review and Sign-off	Solution Life Cycle
Deployment	Transition to Support Readiness Review	Solution Life Cycle
Support		

2.3 Review Estimating Guidelines

	Plan	**Prepare**	**Conduct**	**Write Up**	**Follow Up**	**Other (Train)**	**Typical**
QA Review Lead	3 hrs.	1 hr	1 hr.	2 hrs.	1 hr	N/A	**8 hrs.**
QA Team Members (1-3)		1 hr	1 hr	1 hr	1 hr	N/A	**4 hrs.**
Project Members (1-3)	1 hr				1 hr		**2 hrs.**

2.4 QA Tools

The Solution Life Cycle QA Plan template was used to create the Quality Assurance Plan. The Quality Assurance checklist will be used to ensure the System Acquisition Plan, Requirement Documents, Configuration Management Plan (CM) and Transition to Support Plan is thorough and complete. eProject will be used to log Enterprise Portal Issues. Rational ClearCase will be used for configuration management and version control. Rational ClearQuest will be used for defect and change control tracking.

2.5 QA Records

Document Name	Description
Quality Audit Report (QAR)	Reports to the project manager and project team on the findings of QA audits. The QAR includes the completed forms, checklists, and worksheets from product and process reviews.

2.6 Training

No formal training is planned but the Continuous Improvement Liaison will conduct a QA Orientation session to familiarize the project manager on project QA Review Process, establish collaborative practices between the QA Reviewer and the Enterprise Portal Project team, and outline roles for those involved.

2.7 Standards

The SFA Enterprise Portal Project follows the standards set forth by the SFA Solution Life Cycle process.

3.0 QA Metrics Tracking

3.1 Objective

Team Input Procedures

The following procedures will be implemented to obtain project team member inputs on quality and continuous improvement:

- The Enterprise Portal Project Team will abide by the precepts set forth in Accenture Policy 1162. Accenture Policy 1162 ensures we are developing, maintaining and deploying best practices, methodologies and tools outlined in the Capability Maturity Model-Integrated (CMMI) framework. All Accenture government projects must abide to this policy.
- The weekly status meetings will be used to solicit feedback and suggestions from team members regarding the quality of work and the effectiveness and efficiency of project processes. Sources and causes of errors will be discussed, common issues and problems will be determined, and best practices (or things that are going well) will be shared.
- The Enterprise Portal Issues/Improvements Log within the eProject will be used to document hints, questions, and issues pertaining to how things can be done better, and what pitfalls are encountered in doing the day-to-day tasks.
- Quality Sessions will be conducted to incorporate best practices and improve the processes within the project team. These sessions will be scheduled by the SQA Manager, either as brown bag sessions or a special team meetings.

Peer Review Program

Periodically members of the Enterprise Portal Project Team will be asked to serve as peers in order to review work products produced under this task order. For those times, the following process will apply:

- The deliverable to be reviewed will be distributed at least 3 business days ahead of time.
- Peers will be invited to attend via email.
- Meeting space will be reserved.
- At the meeting time, peers will be given the chance to walk through the item from beginning to end providing any comments they have at this time,
- Minutes will be taken to document all comments and distributed to meeting participants.
- Product owners will have 3 business days to respond to all comments.

Peer reviews will be conducted on all critical deliverables prior to client review.

3.2 Process

Erick Middleton will work with the QA Manager to collect the metrics below. The PI Liaison will be responsible for analyzing the metrics data, and communicating the results to project personnel and project management.

Quality Assurance Metrics

			Rationale		
	Metric	Calculation	Goal (value)	Goal (text)	Question
1	QA Schedule Variance	(Scheduled QA Review date) - (Actual QA Review date)	0 – 10%	Consistently hold QA Reviews on the promised date	How predictable and consistent is our process?
2	Number of Issues During SQA Review	Number of issues found per review	Minimal (Demonstrate Improvement when Examining Trends)	Document number of issues	How well are we following the processes/ standards?
3	Number of Issues Found By Client (for deliverables only)	Number of issues found by client	0	Limit rework/ deliverable rejection by identifying them early	How complete are our work products?
4	Number and type of Risks identified (for deliverables only)	Number of Risks	0	Reduce or mitigate risks that may impact deliverables	How do we diminish effect on our work products?
5	Number of Constraints identified	Number of Constraints	Minimal	Resolve to identify solutions	How do we account for effect of constraints?

6	Number of Peer Reviews held	Number of Peer Reviews, work products reviewed	One review per work product	Maximize benefit of Peer Review process	How do we ensure Peer Reviews are conducted?
7	Effort	Number of FTE hours		Maximize resource utilization	How do we make efficient use of resources?

4.0 Document History

All revisions made to this document are listed here in chronological order.

Version Number	Date Modified	Name	Description
1.0	1/29/02	Erick Middleton	Beginning of document creation.
2.0	2/01/02	Erick Middleton	Updated QA process
3.0	2/27/02	Erick Middleton	Made BSC feedback changes.